

Listing of Claims:

1. (Currently Amended) ~~An electronic computer having a~~ A system comprising a dividing device that executes a dividing program for dividing, wherein the dividing program divides an application program into a plurality of processing units and ~~generating~~ generates program data and command code sequences executed by ~~said an~~ said electronic computer, ~~said computer system comprising:~~

said electronic computer, comprising:

a processing device and a control device;

said processing device including reconfigurable hardware for each of said processing units, wherein said processing device comprises:

a processing element with reconfigurable hardware,

a plurality of program data memories, each holding a program that creates a logic circuit directly in said reconfigurable hardware for each of said processing units,

an effective block selection unit that connects one of said program data memories to said processing element;

wherein said control device ~~executing~~ executes a command specified by the processing device, wherein said command is instructed to be executed when the processing device detects a predetermined condition and said command ~~includes an additional command for execution of switching said programs~~ switches which program is input to said processing element logically creating the reconfigurable hardware;

wherein said program is generated with a control flow of the application program, completion data, structural information of the electronic computer and a plurality of command sets of the electronic computer as inputs;

wherein said dividing program executes a control flow analysis procedure ~~for dividing that divides~~ the application program into a plurality of said processing units and ~~generating~~ generates a command sequence intermediate code; and

wherein said dividing program executes a command sequence implementation procedure for translating said command sequence intermediate code into a data string that can be executed by the control device,

wherein said control device interprets and executes:

an activate command selecting one of said program data memories and activating said processing element to start processing a program held in one of the selected program data memories memory;

a halt command halting operation of said processing device;

a load_prg command transferring program data from a specified memory device to one of said program data memories, wherein a parameter of the load_prg command indicates a region of one of said program data memories where the program data is stored;

a cancel_prg command canceling a load_prg ~~instruction operation~~, and

a wait_prg command waiting until completion of the load_prg ~~instruction operation~~.
operation.

2-5. (Cancelled).

6. (Currently Amended) The ~~electronic computer system~~ as defined in claim 1, ~~comprising wherein the electronic computer comprises~~ a command code memory, holding commands that said control device executes, wherein said control device comprises a command code reference device reading commands from the command code memory according to an address specified by said processing device, interpreting, and executing the commands.

7. (Currently Amended) The ~~electronic computer system~~ as defined in claim 6, wherein said command code reference device comprises an address counter holding the address of said command code memory, and in the exchange of commands between said processing device and said control device, a first address control line indicating that an address signal line outputted by said processing device is effective, and a second address counter control line instructing whether the value of the address signal line is stored in the address counter as it is or the result of adding the value of the address signal line to the value of the address counter is stored in the address counter when the first control line is effective.

8. (Currently Amended) The ~~electronic computer system~~ as defined in claim 7, wherein said commands are stored in said command code memory in a format comprising a command code that classifies the commands, an address counter control code, and a flag that indicates whether or not the following command is executed, and said address counter control

code includes a load_adr command setting the value of the address counter and a add_adr command adding a specified value to the address counter.

9. (Currently Amended) ~~The electronic computer system~~ as defined in claim 8, wherein said address counter control code includes a push_adr command that hides the value of the address counter in an address counter stack provided in said control device and that sets a new value to the address counter, and a pop_adr command that returns the value of the address counter stack to the address counter.

10. (Currently Amended) ~~The electronic computer system~~ as defined in claim 1, ~~comprising wherein the electronic computer comprises~~ a cache device including a cache memory that temporarily holds data to be transferred to said processing device and a cache controller that controls the cache memory wherein the cache controller is controlled by a command issued by said processing device.

11. (Currently Amended) ~~The electronic computer system~~ as defined in claim 10, wherein said cache device comprises an address translation device that translates an address defined externally to said processing device into an address defined inside of the processing device, and the address translation device is controlled by a command issued by said processing device.

12. (Currently Amended) ~~An electronic computer~~ A system comprising:
a dividing device ~~for dividing that divides~~ an application program into a plurality of processing units;

a processing device including reconfigurable hardware that ~~can create~~ creates a logic circuit for each said processing unit, ~~having a by executing a respective~~ program, wherein said program is generated, given a control flow of the application program, completion data, structural information of the electronic computer and a plurality of command sets of the electronic computer as inputs, by executing a control flow analysis procedure ~~for generating that generates~~ a command sequence ~~executed after a process,~~

~~executing wherein the dividing device executes~~ a command sequence implementation procedure ~~for translating that translates~~ said command sequence into a data

string, and ~~executing~~ executes a program data generation procedure ~~for generating that generates~~ program data; and

a control device ~~executing that executes~~ a command specified by the processing device;

wherein said command is instructed to be executed when the processing device detects a predetermined condition and ~~includes a command for execution of switching said programs wherein the command switches which program is input to said reconfigurable hardware~~ logically creating the reconfigurable hardware; and

said processing device comprises a second ~~processing device including~~ reconfigurable hardware that ~~can create~~ creates a logic circuit ~~with~~ by executing a program and a second control device ~~executing that executes~~ a command specified by the second ~~processing device~~ reconfigurable hardware,

wherein said first and second control device interprets and executes;

an activate command selecting one of ~~said multiple~~ program data memories and activating said ~~processing element reconfigurable hardware~~ to start processing a program held in ~~one of the selected program data memories~~ memory;

a halt command halting operation of said processing device;

a load_prg command transferring program data from a specified memory device to one of said program data memories, wherein a parameter of the load_prg command indicates a region of one of said program data memories where the program data is stored;

a cancel_prg command canceling a load_prg ~~instruction command~~, and

a wait_prg command waiting until completion of the load_prg ~~instruction~~ command.

13. (Currently Amended) ~~A semiconductor integrated circuit implementing the electronic computer as defined in claim 1. The system as defined in claim 1, wherein the electronic computer is implemented on a semiconductor integrated circuit.~~

14. (Currently Amended) A control method in ~~an electronic computer a~~ system for switching and executing programs generated by dividing an application program into a plurality of processing units, wherein said system comprises an electronic computer that

includes a control device and a processing device with reconfigurable hardware that ~~can create~~ creates a logic circuit for each of said processing units, said control method comprising:

~~issuing an instruction to execute a command to the control device by the~~
processing device when a the processing device detects a predetermined condition,

generating a program, given a control flow of the application program,
completion data, structural information of the electronic computer and a plurality of command
sets of the electronic computer as inputs, by executing a control flow analysis procedure ~~for~~
~~generating that generates~~ a command sequence, wherein the command sequence is executed by
using said control device,

executing a command sequence implementation procedure ~~for translating that~~
translates said command sequence into a data string,

executing a program data generation procedure ~~for generating that generates~~
program data;

~~executing~~ switching said programs that logically create reconfigurable hardware
by said control device that has ~~received the command execution instruction~~ executed the
command from the processing device;

interpreting and executing:

an activate command selecting one of ~~said multiple~~ multiple program data memories and
activating said ~~processing element device~~ processing element device to start processing a program held in ~~one of the~~
selected program data memories;

a halt command halting operation of said processing device;

a load_prg command transferring program data from a specified memory device
to one of said program data memories, wherein a parameter of the load_prg command indicates a
region of one of said program data memories where the program data is stored;

a cancel_prg command canceling a load_prg ~~instruction command~~, and

a wait_prg command waiting until completion of the load_prg ~~instruction~~
command.

15. (Previously Presented) The control method as defined in claim 14,
wherein, after said switching, while a program in a predetermined program data memory is being
executed, a next program is read into another program data memory.

16. (Currently Amended) A control method, in ~~an electronic computer a~~ system for switching and executing programs generated by dividing an application program into a plurality of processing units, wherein said system comprises an electronic computer that includes a control device and a processing device with reconfigurable hardware ~~that can create~~ creates a logic circuit for each of said processing units, said control method comprising:

- issuing ~~an instruction to execute~~ a command to the control device by the processing device when ~~a~~ the processing device detects a predetermined condition, said processing device including reconfigurable hardware ~~and~~ a plurality of program data memories that hold programs for each said processing unit, wherein said programs are generated, given a control flow of the application program, completion data, structural information of the electronic computer and a plurality of command sets of the electronic computer as inputs, by executing a control flow analysis procedure ~~for generating that generates~~ a command sequence ~~using,~~ wherein the command sequence is executed by said control device,
- executing a command sequence implementation procedure ~~for translating that~~ translates said command sequence into a data string, and
- executing a program data generation procedure ~~for generating that generates~~ program data,
- creating logic circuits of the reconfigurable hardware, ~~and wherein~~ an effective block selection unit ~~that~~ selects one program data memory from the plurality of program data memories ~~and that~~ makes it effective;
- executing, by said control device that has received the command ~~execution instruction~~ from the processing device, an activate command controlling the effective block selection unit so as to make a specified program data memory effective and connecting it to the reconfigurable hardware;
- switching the content of a logic circuit ~~executed by in~~ the reconfigurable hardware;
- interpreting and executing:
 - an activate command selecting one of said program data memories and activating said processing element to start processing a program held in one of the selected program data memories;
 - a halt command halting operation of said processing device;

a load_prg command transferring program data from a specified memory device to one of said program data memories, wherein a parameter of the load_prg command indicates a region of one of said program data memories where the program data is stored;

a cancel_prg command canceling a load_prg ~~instruction command~~, and

a wait_prg command waiting until completion of the load_prg ~~instruction command~~.

17. (Currently Amended) The control method as defined in claim 16, wherein said control device executes:

~~a halt command halting the operation of said specified processing device;~~

an interrupt command issuing an interrupt vector from said control device to said specified processing device;

~~a load_prg command transferring program data from a specified memory device to said program data memory;~~

~~a cancel_prg command canceling a load_prg instruction, and~~

~~a wait_prg command waiting until a completion of the load_prg instruction.~~

18. (Currently Amended) A program generation method for an electronic computer executing an application program divided into a plurality of processing units, wherein said electronic computer includes a control device and a processing device with reconfigurable hardware that can create a logic circuit for each of said processing units ~~and a control device~~, comprising:

analyzing a control flow of the application program;

implementing a command sequence procedure in which a command sequence is generated by translating a command sequence intermediate code into a form that can be executed by the electronic computer; and

generating program data in which operational content of a processing unit is translated into a form that can be executed by the electronic computer,

wherein the application program is divided so that ~~each processing unit can be stored in a multiple~~ program data ~~memory~~ memories hold that holds a program creating a logic circuit for each processing unit in said reconfigurable hardware when ~~a the~~ control flow of the

application program is analyzed and divided into processing units ~~in~~ during said analyzing a control flow step;

~~interpreting and executing~~ wherein the control device interprets and executes:

an activate command selecting one of said program data memories and activating said processing element to start processing a program held in one of the selected program data memories;

a halt command halting operation of said processing device;

a load_prg command transferring program data from a specified memory device to one of said program data memories, wherein a parameter of the load_prg command indicates a region of one of said program data memories where the program data is stored;

a cancel_prg command canceling a ~~load_prg-instruction command~~, and

a wait_prg command waiting until completion of the ~~load_prg-instruction command~~.

19. (Cancelled).

20. (Currently Amended) A computer program product ~~for an electronic computer~~ for switching and executing programs on an electronic computer, the programs generated by dividing an application program into a plurality of processing units, wherein said electronic computer includes a control device and a processing device with reconfigurable hardware that can create a logic circuit for each of said processing units, the computer program product embodied in a computer readable medium, which when executed, causes a computer system to perform the steps of:

~~issuing an instruction to execute~~ a command to the control device by the processing device when the processing device detects a predetermined condition,

generating a program, given a control flow of the application program, completion data, structural information of the electronic computer and a plurality of command sets of the electronic computer as inputs, by executing a control flow analysis procedure ~~for generating that generates~~ a command sequence ~~using~~, wherein the command sequence is executed by said control device,

executing a command sequence implementation procedure ~~for translating that translates~~ said command sequence into a data string, and

executing a program data generation procedure ~~for generating that generates~~
program data executed by the processing device;

~~executing~~ switching said program that logically creates reconfigurable hardware
by said control device that has ~~received the command execution instruction~~ executed the
command from the processing device;

interpreting and executing:

an activate command selecting one of ~~said multiple~~ program data memories and
activating said processing ~~element device~~ to start processing a program held in ~~one of~~ the
selected program data ~~memories~~ memory;

a halt command halting operation of said processing device;

a load_prg command transferring program data from a specified memory device
to one of said program data memories, wherein a parameter of the load_prg command indicates a
region of one of said program data memories where the program data is stored;

a cancel_prg command canceling a load_prg ~~instruction command~~, and

a wait_prg command waiting until completion of the load_prg ~~instruction~~
command.

21. (Currently Amended) A computer program product, ~~for an electronic~~
~~computer~~ for switching and executing programs on an electronic computer, the programs
generated by dividing an application program into a plurality of processing units, wherein said
electronic computer includes a control device and a processing device with reconfigurable
hardware that can create a logic circuit for each of said processing units, the computer program
product embodied in a computer readable medium, which when executed causes a computer
system to perform the steps of:

issuing ~~an instruction to execute a command~~ to the control device by the
processing device when the processing device detects a predetermined condition, said processing
device including a plurality of program data memories that hold programs for each said
processing unit, wherein said programs are generated, given a control flow of the application
program, completion data, structural information of an electronic computer and a plurality of
command sets of the electronic computer as inputs, by executing a control flow analysis
procedure ~~for generating that generates~~ a command sequence ~~executed after a process~~,

executing a command sequence implementation procedure ~~for translating that~~
translates said command sequence into a data string, and

executing a program data generation procedure ~~for generating that generates~~
program data using the processing device,

creating logic circuits of the reconfigurable hardware, ~~and wherein~~ an effective
block selection unit ~~that selects one program data memory from the plurality of program data~~
memories and ~~that makes it effective;~~

executing, by the control device that has received the command ~~execution~~
~~instruction~~ from the processing device, an activate command controlling the effective block
selection unit so as to make a specified program data memory effective and connecting it to the
reconfigurable hardware;

switching the content of a logic circuit ~~executed by in~~ the reconfigurable
hardware;

interpreting and executing:

an activate command selecting one of said program data memories and activating
said processing element to start processing a program held in one of the selected program data
memories;

a halt command halting operation of said processing device;

a load_prg command transferring program data from a specified memory device
to one of said program data memories, wherein a parameter of the load_prg command indicates a
region of one of said program data memories where the program data is stored;

a cancel_prg command canceling a load_prg ~~instruction command~~, and

a wait_prg command waiting until completion of the load_prg ~~instruction~~
command.

22. (Currently Amended) The computer program product, embodied in a
computer readable medium as defined in claim 21, ~~further comprising computer code which~~
~~includes a halt command halting operation of said specified processing device, wherein an~~
~~interrupt command issuing issues an interrupt vector from said control device to said specified~~
~~processing device, a load_prg command transferring program data from a specified memory~~
~~device to said program data memory, a cancel_prg command canceling a load_prg instruction,~~
~~and a wait_prg command waiting until a completion of the load_prg instruction are executed.~~